

of head there is a violet blotch. From between the middle of the eyes in the anterior half is an unpigmented spot which later becomes conspicuous after preservation. Dorsal surface of snout dusky. Maxilla, cheeks and ventral side of head silvery. Fins hyaline.

DISCUSSION

The present specimens conform to the description given by Smith (1965) for *Iso natalensis* in all respects except for minor differences in the dorsal fin formula and the number of lateral series of scales. Smith (op. cit.) gave the number of first dorsal spines as IV-VI. In the present specimens the number ranges from III-VI. The lateral series of scales are found to be less in number (42-52) as against 60 given by Smith. The presence of a smaller number of scales may be correlated to the smaller size of the specimens as observed by Smith.

Iso flosindicus Herre, 1944 has been recorded earlier from Visakhapatnam. But the present specimens differ from the above species in the number of dorsal spines, gill rakers, anal fin rays and lateral series of scales (Table 1).

This fish is being recorded for the first time from India from a rock-pool at Visakhapatnam on the east coast. The authentic record so far is only from South Africa (Smith 1961). According to Smith (1961) related species recorded from Japan and Australia held to be distinct may all eventually be found to be the same (species) (p. 324). As Herre (1944) erected the species *Iso flosindicus* on the basis of a single specimen, which was much spoiled, its validity is doubtful. However, the type should be compared before the name is synonymised.

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April 19, 1989

REFERENCES

HERRE, A.W.C.T. (1944): Notes on fishes in the Zoological Museum of Stanford University. XVII. New fishes from Johore and India. *Proc. Biol. Soc. Wash.* 57: 45-52.
REGAN, C.T. (1919): Fishes from Durban. *Ann. Durban Mus.* 2: 200-201.
SMITH, J.L.B. (1961): The sea fishes of Southern Africa.

S. Africa: Central News Agency, (4th Ed.; 480 pp.
(1965): Fishes of the family Atherinidae of the Red Sea and the Western Indian Ocean with a new freshwater genus and species from Madagascar. *Ichthyol. Bull. Rhodes Univ.* 31: 602-629.

42. KEY TO GENERA AND RECORDS OF SOME SPECIES OF COCCINAE (HOMOPTERA : COCCIDAE) FROM INDIA

Subfamily COCCINAE Falien

Recently, Varshney (1985) listed 25 genera of Coccidae from India under 3 subfamilies : Filippiinae, Coccinae and Ceroplastinae. In the present study only 2 subfamilies are recognized except Filippiinae, the genera of which are considered here in Coccinae. The Indian genera and species of Ceroplastinae are included by Avasthi & Shafee (1986). Therefore only the subfamily Coccinae is treated here which is represented by 23 genera from India. So far, no consolidated key for the identification of Indian genera is available. The main object of this paper is to present a key to the Indian genera of Coccinae.

Observations if any, and records of 6 species of Coccinae are also given. The genus *Chloropolyinaria* Borchsenius is not considered here as distinct from *Pulvinaria* Targ.—Tozzt. as we did not find any remarkable difference between these two genera. The material studied by us are deposited in the Zoological Museum, Aligarh Muslim University, Aligarh, India.

KEY TO INDIAN GENERA OF COCCINAE, BASED ON ADULT FEMALES

- 1. Marginal setae variously shaped, but never broadly expanded and flattened..... 2
- Marginal setae broadly expanded and flattened *Paralecanium* Cockerell
- 2. Cribiform plates or rounded chitinous areas present on dorsum 3
- Cribiform plates absent on dorsum 5
- 3. Legs and antennae absent or much reduced; with more than 4 cribiform plates of variable sizes 4
- Legs and antennae well developed; with only 4 quite large cribiform plates, all of about the same size *Hemilecanium* Newstead.

4. Legs and antennae rudimentary; derm around anal plates unsclerotized...*Cribolecanium* Green
- Legs and antennae absent; derm around anal plates strongly sclerotized..... *Akermes* Cockerell
5. 8-shaped pores absent on dorsum, if present sparse in distribution..... 6
- Large 8-shaped pores present along the mid—dorsal line and around body margin*Cardiococcus* Cockerell
6. Legs and antennae well developed; multilocular pores mainly confined to abdominal venter; spiracles not surrounded by sclerotic plate.....7
- Legs and antennae much reduced or rudimentary; numerous multilocular pores present along the sides of body; spiracles surrounded by a sclerotic plate*Lecanopsis* Targioni—Tozzetti
7. Longitudinal series of conical spines absent on dorsum.8
- 2 longitudinal series of short, thick conical spines extend from rostrum to abdomen on dorsum*Metaceronema* Takahashi.
8. Ventral tubular ducts numerous.....9
- Ventral tubular ducts absent or very few in number21
9. Stigmatic spines if present 1–6 only.....10
- Stigmatic spines numerous, stout, bluntly rounded, in the usual 4 groups, each accompanied by sclerotic plate*Ceronema* Maskell.
10. Stigmatic spines more or less resemble with marginal spines or somewhat represented by 1–2 slightly longer setae11
- Stigmatic spines 3, rarely 5–6, much distinct from marginal setae15
11. Tubular ducts either absent on dorsum or very infrequent, if numerous, sparsely distributed12
- Tubular ducts very frequent on dorsum, arranged in mid—longitudinal and marginal band*Dicyphococcus*. Borchsenius
12. Marginal setae conical or slenderical 13
- Marginal setae spear—head shaped*Ceroplastodes* Cockerell
13. Submarginal band of tubular ducts absent on venter 14
- Submarginal band of tubular ducts present on venter.*Eulecanium* Cockerell
14. Distinct mid—dorsal line of pores present; multilocular pores confined to anal region and on the abdomen; glossy test is divided longitudinally into two halves.....*Inglisia* Maskell.
15. Mid-dorsal line of pores absent; multilocular pores present throughout the median region of thorax and abdomen; glossy test notdivided longitudinally into two halves *Ctenochiton* Maskell
15. Anal cleft normal not extending to centre of body; anal plates variable 16
- Anal cleft long extending to centre of body; anal plates elongate, about 4 times longer than wide*Protopulvinaria* Cockerell
16. Submarginal band of tubular ducts present on venter 17
- Submarginal band of tubular ducts absent on venter 19
17. Multilocular pores confined only to the abdominal venter; median stigmatic spine much longer than laterals..... 18
- Multilocular pores present ventrally on abdomen and also present in groups behind base of each coxae.....*Parthenolecanium* Sulc.
18. Dorsal setae cylindrical or slightly swollen apically; anal plates without large discal seta; dorsum with cellular pattern composed of distinct polygonal areas..... *Parasaissetia* Takahashi
- Dorsal setae setose or spinose; anal plates with a large discal seta; dorsum with cellular pattern composed of much less distinct circular or oval areas..... *Saissetia* Deplanche
19. Marginal setae of variable shapes, simple, bifid, fimbriate or clubbed apically; stigmatic clefts usually with 3 spines, anal plates with thin apical setae 20
- Marginal setae thick, stout, more or less cylindrical, mostly with bidentate apices; stigmatic clefts each with 4-5 spines of variable lengths; anal plates with a thick apical setae...*Megapulvinaria* Young.

20. Ovisac is not strongly convex (Borchsenius, 1957)..... *Eupulvinaria* Borchsenius
- Ovisac strongly convex (Borchsenius, 1957)..... *Pulvinaria* Targioni—Tozzetti
21. Stigmatic spines 3, median longer than laterals, located in the centre of the clefts; paraopercular pores if present few, never extend upto head.....22
- Stigmatic spines 2 of equal sizes on either end of the sclerotized band; paraopercular pores numerous, arranged in a band along the median line of the body and extending as far as the head.....*Marsipococcus* Cockerell & Bueker
22. Dorsum with large tessellation.....*Eucalymnatus* Cockerell
- Dorsum without tessellation.....*Coccus* Linnaeus

Ceroplastodes cajani (Maskell)

Material examined: 16 females, INDIA: Uttar Pradesh, Aligarh, on *Ficus infectoria* 10. viii. 1980 (R.K. Avasthi).

This species is more common on *Ficus* plants at Aligarh. It is easily recognized in the field by the presence of glossy covering whereas the mounted specimens by the presence of single large spine on dorsum at the region of stigmatic clefts and two rows of small spear—head shaped marginal spines.

Megapulvinaria maxima (Green)

Material examined: 2 females INDIA: Andhra Pradesh, Nellore, Bucchireddypalam, on weed plant, 27. i. 1978; 1 female, Tamil Nadu, Coimbatore, on *Flacourtia indica*, 27. iii 1979 (R.K. Avasthi).

This species is considered as a serious pest of Neem trees in India (Ayyar 1930). Mounted specimens are easily identified by the stout, truncated marginal spines with bidentate apices.

Parasaissetia nigra (Niemer)

Material examined: 8 females INDIA: Tamil Nadu, Coimbatore, on *Hibiscus rosa-sinensis* L., and *Abutilon indicum*, 27. iii. 1979 (R.K. Avasthi).

Mounted specimens of this species are easily identified by the presence of large pale polygonal areas and thick, cylindrical setae with slightly swollen apices on dorsum.

Saissetia coffeae (Walker)

Material examined: 3 females, India: Andhra Pradesh, Guntur, on *Cajanus cajan*, 5. i 1967; 5 females, Tamil Nadu, Tirunlveli, on *Psidium guava* L., 5. iii. 1967 (S.A. Shafee). 2 females, Coimbatore, Mettupalaiyam, on weed plant, 27. iii 1979 (R.K. Avasthi).

Saissetia oleae (Olivier)

Material examined: 4 females, INDIA: Andhra Pradesh, Guntur, Ponnur, on *Cajanus cajan*, 3. iv. 1979 (R.K. Avasthi).

De Lotto (1971) discussed the authorship of this species and credited it to Olivier instead of Bernard.

Saissetia privigna De Lotto

Material examined: 5 females, INDIA: Andhra Pradesh, Guntur, on *Abelmoschus esculentus* 14. iv. 1979 (R.K. Avasthi).

This species is closer to *S. oleae*, but distinctly differs in having numerous long marginal setae and in the shape of tubular ducts which have inner ductule much narrower than outer.

ACKNOWLEDGEMENTS

We are grateful to the Chairman, Department of Zoology, A.M.U. Aligarh, for providing research facilities. One of us (RKA) is thankful to C.S.I.R., New Delhi for financial assistance.

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August 18, 1988.

REFERENCES

AVASTHI, R.K. & SHAFEE, S.A. (1986): Species of Ceroplastinae (Homoptera: Coccidae) from India. *J. Bombay nat. Hist. Soc.*, 83(2): 327-338.

AYYAR, T.V.R. (1930): A contribution to our knowledge of South Indian Coccidae (scales and mealy bugs). *Bull. Agr. Res.*

Inst. Pusa, 197 (1929): 77 pp.

BORCHSENIUS, N.S. (1957): Fauna of U.S.S.R. Homoptera, Coccidae (in Russian) *Akad. Nauk Zool. Inst.* (n.s. 66)9: 493 pp.

DE LOTTO, G. (1971): The authorship of the Mediter-